WE CLAIM:

1. A method for locating mobile units within an area using a wireless local area network, comprising:

providing reference signal transmitters at selected fixed locations within said area;

transmitting reference signals using said reference signal transmitters using a first selected channel of said wireless local area network;

providing a computer having a database relating signal characteristics of signals transmitted by said reference signal transmitters to location within said area;

providing at least one access point coupled to said computer and providing wireless data communications between said computer and at least one mobile unit in said area using one or more channels of said wireless data communications system that are different from said first data communications channel;

receiving a selected plurality of said reference signals at said at least one mobile unit, determining signal characteristics of said received reference signals and transmitting data representing said received reference signal characteristics to said computer via said at least one access point using said one or more data communications channels; and

receiving said data representing reference signal characteristics at said computer and determining position of said mobile unit using said database.

2. A method as specified in claim 1 wherein said providing a computer having a database comprises providing a database relating signal strength characteristics to location within said area, and wherein determining signal characteristics for said received reference signals comprises determining received signal strength for said reference signals.

3. A method as specified in claim 2 wherein said wireless local area network is an IEEE Standard 802.11 network and wherein determining signal strength comprises determining RSSI value at said at least one mobile unit.

4. A method as specified in claim 1 wherein said transmitting reference signals comprises periodically transmitting reference beacon signals at selected beacon intervals.

5. A method as specified in claim 4 wherein said beacon intervals are selected to be different for each of said reference signal transmitters.

6. A method as specified in claim 1 wherein said reference signals are transmitted in response to request signals transmitted by a mobile unit on said first non-overlapping channel.

7. A method as specified in claim 1 wherein said data communications channels are selected to be non-overlapping with said first selected channel.

8. A method as specified in claim 1 wherein said reference signal transmitters receive signals on said first selected channel and delay said reference signal transmissions if a signal is detected on said first selected channel.

9. A system for locating mobile units within an area using a wireless local area network, comprising:

a selected plurality of reference signal transmitters located at selected fixed locations within said area, said reference signal transmitters being arranged to transmit reference signals using a first selected channel of said wireless local area data network;

a computer having a database relating signal characteristics of signals transmitted by said reference signal transmitters to location within said area;

at least one access point coupled to said computer and providing wireless data communications between said computer and one or more mobile units in said area using one or more channels of said wireless data communications system that are different from said first selected data communications channel; and

at least one mobile unit arranged to receive a selected plurality of said reference signals, determine signal characteristics of said received reference signals and transmit data representing said signal characteristics to said computer via said at least one access point using said one or more data communications channels; and

wherein said computer is arranged to receive said data representing signal characteristics and determine position of said mobile unit using said database.

10. A system as specified in claim 9 wherein said computer has a database relating signal strength characteristics to location within said area, and wherein said mobile unit is arranged to determine received signal strength for said reference signals.

11. A system as specified in claim 10 wherein said wireless local area network is an IEEE Standard 802.11 network and wherein said mobile unit is arranged to determine signal strength using an RSSI function.

12. A system as specified in claim 9 wherein said reference signal transmitters are arranged to periodically transmit said reference signals as reference beacon signals at selected beacon intervals.

13. A system as specified in claim 12 wherein said reference signal transmitters are arranged to transmit said reference signal beacons at different beacon intervals.

14. A system as specified in claim 9 wherein said reference signal transmitters are arranged to transmit said reference signals in response to request signals transmitted by a mobile unit on said first non-overlapping channel.

15. A system as specified in claim 9 wherein said data communications channels are selected to be non-overlapping with said first selected channel.

16. A system as specified in claim 9 wherein said reference signal transmitters are arranged to receive signals on said first selected channel and delay said reference signal transmissions if a signal is detected on said first selected channel.

17. A mobile unit, comprising:

a radio unit arranged to receive reference signals using a first selected channel and to transmit and receive data signals using at least one data communications channel that is different from said first data communications channel; and

a processor arranged to determine received signal characteristics of said reference signals received on said first selected channel, generate data representing said received signal characteristics and cause said radio unit to transmit a data message having said generated data.

14. A mobile unit as specified in claim 13, wherein said processor is further arranged to control said radio unit to receive said reference beacon signals only during selected periodic location time intervals having a selected duration.

15. A mobile unit as specified in claim 13, wherein said mobile unit is arranged to transmit request signals using said first selected channel and receive said references signals in response to said request signals.

18. A mobile unit, comprising:

a radio unit arranged to receive reference signals using a only first selected channel; and

a processor arranged to power up said radio unit at selected time intervals, determine received signal characteristics of said reference signals received on said first selected channel, generate and store data representing said received signal characteristics and thereafter power down said radio unit.

19. A mobile unit, comprising:

a radio unit arranged to receive reference signals using a only first selected channel; and

a processor having a database arranged to power up said radio unit at selected time intervals, determine received signal characteristics of said reference signals received on said first selected channel, generate data representing said received signal characteristics, determine location data by comparing said signal characteristic data to said database, store said location data and thereafter power down said radio unit.

20. A mobile unit, comprising:

a radio unit arranged to receive reference signals using a only first selected channel and to transmit data using at least one other data communications channel different from said first selected channel; and

a processor having a database arranged to power up said radio unit at selected time intervals, determine received signal characteristics of said reference signals received on said first selected channel, generate data representing said received signal characteristics, determine location data by comparing said signal characteristic data to said database, transmit said location data using said communications channel and thereafter power down said radio unit.